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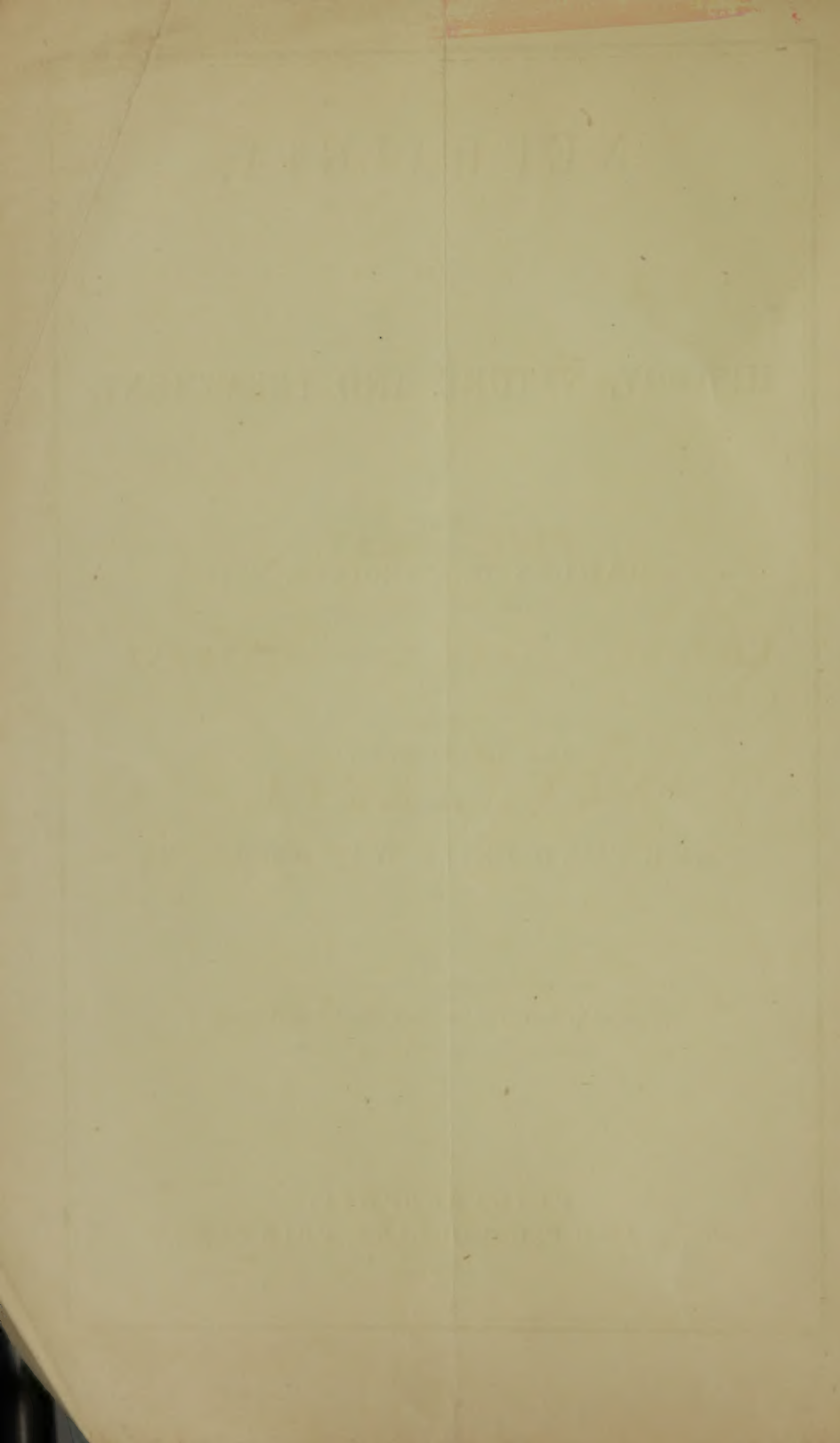
NEURALGIA,
ITS
HISTORY, NATURE, AND TREATMENT.

BY
CHARLES W. PARSONS, M.D.,
OF PROVIDENCE, RHODE ISLAND.

THE DISSERTATION
TO WHICH THE
FISKE FUND PRIZE WAS AWARDED.

Published by Request of the Rhode Island Medical Society.

PHILADELPHIA:
T. K. AND P. G. COLLINS, PRINTERS.
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PRIZE ESSAY.

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THE Trustees of the Fiske Fund, at the annual meeting of the Rhode Island Medical Society, held at Providence, June 7, 1854, announced that the premium of fifty dollars offered by them in 1853, for the best dissertation on *Neuralgia, its history and best mode of treatment*, had been awarded to the author of the dissertation bearing the motto,

"What is writ is writ,
Would it were worthier!"

And upon breaking the seal of the accompanying packet, they learned that the successful competitor was Charles W. Parsons, M. D., of Providence, R. I.

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NEURALGIA.

THE writer cannot suppose that a detailed description of the symptoms or varieties of locality of neuralgia is expected in this Essay. It is believed that the objects for which this generous foundation was established, and is now administered, will be best consulted by brevity, and a strictly practical aim in the choice of topics. We shall, therefore, confine ourselves to the following subjects:—

- I. The General Topography of Neuralgia.
- II. Its Causes.
- III. Its "Nature," or Pathology.
- IV. Its Treatment.

I. By *general topography* we mean an account of the kinds of nerves, or divisions of the nervous system in which neuralgia exists; and also some general statements as to the situations in the course of any nerves, which are its ordinary seats and centres of radiation. We do *not* mean to include a list of all the individual nerves that are sometimes attacked.

Neuralgia is best known as occurring in the cerebro-spinal nerves. Does it ever attack those of the ganglionic or sympathetic system? Experiment has proved that mechanical irritation of these nerves does not elicit signs of pain till after a time, when congestion or vascular excitement is produced, and then acute pain is caused by such irritation.¹ We might expect then that other irritating causes, such as poisons circulating in the blood, or some derangement of different functions, might produce an analogous sensitiveness in the nerves of the sympathetic system. And such is the fact. The analogy of many painful visceral affections to external neuralgia is as complete as the nature of the case admits; though the sensations cannot be described so definitely, because the nervous fibres have not so direct and continuous a relation

¹ Brachet, *Recherches Expérimentales sur les fonctions du Système Nerveux Ganglionnaire*. Paris, 1837.

with the sensorium as the cerebro-spinal nerves have. These affections, *gastralgia*, *nephralgia*, &c., are not necessarily or usually connected with any change of structure. In *angina pectoris*, one of this class, ossification of the coronary arteries, fatty degeneration of the heart, and other organic alterations have been found, but by no means uniformly; they are not, so far as we now know, essential parts of the disease. The attacks of these "*visceral neuralgiæ*" are generally marked by little constitutional disturbance, in proportion to their severity. They are paroxysmal, and often the fits arise without any obvious exciting cause. Though very obstinate, they sometimes subside suddenly, we know not why, and their long continuance does not always seriously affect the general health, except by the mere amount of suffering. They occasionally alternate with external neuralgia. If the attacks of those which occupy glandular organs sometimes end in a sudden flow of secretion, the same is common also in the analogous affection of the fifth pair.¹ It is true that there is generally some functional derangement accompanying the pain, and, of course, the distinct character of these internal neuralgiæ, as pure *nerve-pains*, is not so perfectly marked, nor so uncomplicated, as in pains of the superficial nerves.

How far the acquired sensitiveness of ganglionic nerves depends on their connections with the cerebro-spinal system, is a question properly of physiology, which we will waive.

Among cerebro-spinal nerves, the most superficial ones are said to be the most common seats of well-marked neuralgia. But to this there are many exceptions. Nerves which plunge into the thickness of dense organs have their branches closely interwoven with the tissues around, so that the sensorium can only distinguish a diffused pain. Such affections as neuralgia of bone and of the testis (when the spermatic cord is not involved), are called neuralgic, because pain is altogether out of proportion to the slight and inconstant anatomical changes. But in the superficial nerves, pain can be tracked along the nervous trunks, so that a patient can study their anatomy on his own person. Facial, dorso-intercostal, and sciatic neuralgia are believed to be the most common forms.

But certain points appear to be the peculiar and favourite rallying points, or foci, of this disease. This part of its history has been particularly investigated by Valleix,² and his observations are among the most interesting additions recently made to our knowledge of this affection. The "*focal points*" of external neuralgia are generally in the following situations:—

1. The place of emergence of a nervous trunk, as at the supra-orbital and infra-orbital foramina, the crural arch and ischiatic notch, &c.

2. The points where a nervous branch comes out through the muscles, to ramify in the integuments. For example, where the posterior branch of the second cervical appears behind the mastoid process, or where those of the lower spinal nerves become superficial.

3. The points where the terminal branches of a nerve expand in the integuments, as at the anterior extremity of the intercostal nerves.

4. The points where the nervous trunks become superficial during their course, as where the ulnar nerve passes the inner condyle.

These points are peculiarly liable to suffer in neuralgia; they are, almost

¹ The secretions may be apparently *perverted* during the fits. A patient of Macculloch suffered from neuralgia in different superficial nerves, and at last from nephralgia, accompanied by diabetes mellitus. This "was strictly paroxysmal, or the morbid secretion of sugar commenced with the fit, and entirely disappeared in the interval."

² *Traité des Névralgies*, &c. Paris, 1841.

without exception, sensitive on pressure in the intervals between the attacks, but much more so during the attacks; at these places there is, in nearly all cases, a constant dull pain, or bruised, tense, or numb feeling; and from these points the lancinating pains diffuse themselves, either by spreading along the nerve in a continuous line, or leaping over to other spots. Pressure sometimes merely increases the dull pain in these points, sometimes causes twinges along the nerves. The extent of surface over which this tenderness exists is very small, often less than a square inch. The tenderness may be absent at one examination, and be found on a subsequent one; it would appear sometimes to intermit. These facts explain, wholly or in part, the various opinions of observers as to the effects of pressure. I have many times examined the points above mentioned as focal points, in facial and sciatic neuralgia, and have only once failed to ascertain that the patients had painful sensations there in the intervals of acute paroxysms, and that pain was produced by pressing these spots. Valleix mentions but one exceptional case—a sciatica, which had existed only twenty-four or thirty-six hours, and was very slight.

Neuralgia commonly occurs in the nerves which, in health, are conductors of sensation. Is it confined to these, or do some motor nerves ever become morbidly sensitive in this affection? The inquiry is interesting, because many cases of *tic douloureux* occupy the side of the face, and follow nearly or exactly the course of the branches of the facial nerve or *portio-dura*, a motor nerve. They are often believed to be seated in this nerve. Some are accompanied by spasmodic motions of the cheek, which gave rise to the name *tic*, and these are thought to show that the motor functions of this nerve are implicated. To suppose that the same nerve-fibres are at once sending an impression of pain toward the brain, and also a motor impulse from the brain to the muscles, would be in contradiction to all received notions of physiology. In one case—and perhaps many such have occurred—a competent surgeon considered a neuralgic affection to be seated in this nerve, the pains spreading over the cheek from the stylo-mastoid foramen, where this nerve emerges from the cranium. He divided this nerve near its place of exit, with the effect of paralyzing the muscles of that side of the face, with no mitigation of the pain. As to the inference drawn from muscular spasm accompanying the pain, it has been shown by contemporary observers, that real involuntary spasmodic movements are rare in *tic douloureux*.¹ After all, their existence is explained by the anatomical facts, which will be found, we believe, to account for all these phenomena.

Communicating fibres from the inferior maxillary nerve² join the facial near its point of emergence, behind the jaw, so that the latter contains threads whose origin and endowments are the same as those of the trifacial or fifth nerve. In some dissections, this branch from the fifth nerve has been found as large as the whole *portia dura* of the seventh. It has been shown by experiment that, when the fifth nerve is divided within the cranium, the seventh loses all traces of sensibility.

Nor is this all. The posterior branch of the second cervical nerve sends a division to the back part of the scalp, passing almost exactly over that point already named, where the facial nerve issues from the cranium. In many cases, the seventh pair was believed to be affected because the pains started from near the mastoid process. But in many of them it will be found that

¹ Rowland and Valleix. They occurred in four out of fourteen cases observed by Valleix, and in sixteen out of fifty-five, whose history he collected.

² From the ascending branch of the anterior auricular.

the starting-point is intermediate between the mastoid process and spine, exactly where this cervical branch comes out from the muscles to become superficial. Indeed, the same thing is mentioned by authors who did not interpret it as I would do. Halliday, in his Treatise before me, gives a case of "neuralgia of the facial nerve;" it is stated that the pains "set out from the occiput, a little above the nucha, between that and the mastoid process." There had been a softish swelling in the same spot. It is believed these anatomical circumstances may explain most, if not all the alleged instances of neuralgia of the facial nerve.

II. A consideration of the causes of disease is, in a practical point of view, one of the most important parts of its history. It is too common to pay exclusive attention to the structural changes, the visible effects of morbid agents, and to classify disease on such principles alone—an error which cannot fail to have its influence on treatment.

Of the local causes of neuralgia, the most frequent undoubtedly is exposure to cold and wet. These attacks, in my own observation, are most frequent in the earlier months of spring. A residence in cold, damp situations and climates is a predisposing cause. Bellingeri analyzed the history of forty cases, and found thirty-four of them attributable, as he believed, to exposure of this kind. A cold, dry, and piercing wind, or sitting in a current of air, sitting long in wet clothing, are the exciting causes most often and distinctly recognized. Indeed, any agent which deranges the circulation of the surface for a long time, so that a proper reaction is not established, is capable of inducing attacks.

The forms of neuralgia most often produced in this way are, I believe, facial and sciatic. The branches of the trifacial or fifth nerve are distributed over a large extent, many of them are quite near the surface, and the part they supply, the face, is habitually most exposed to changes of temperature. The sciatic nerve is deeply covered, but its fibrous envelop is of denser structure than the neurilemma of other nerves, more allied to the textures usually invaded by rheumatism; and we find, accordingly, that it is very liable to an affection completely analogous to rheumatism in its nature and causes. Sciatica prevails in cold, wet seasons, in stormy and changeable weather, and in low and damp places; also, according to European observers, in sailors and fishermen. The severest and most intractable cases I have seen were in Irish labourers, who had been employed in wet and underground work, and wore their clothing wet for hours.

Exposure to heat has sometimes produced neuralgic attacks, as in the face of a cook who had to stand over a hot fire a great deal. In connection with this may be mentioned a case I have lately seen in a man whose face is often exposed to the vapours of hydrochloric acid. He says that many of those working in the same business have eruptions on the face, which he has not. His neuralgia has lasted six years, and occupies the terminal branches of the superior maxillary nerve.

Direct mechanical injuries are not among the most common causes. Bellingeri analyzed forty cases, and found but two of them from injury. Halliday relates twenty-seven, and only two of these came from injury. In several cases proceeding from this cause, the disease has continued for months or even years after the accident; and the origin of the symptoms has been shown by their immediate subsidence upon making an incision over the part. One case in a girl of fifteen, began after a severe blow on the right temple, continued rather mild for the first two months, then ceased for two or three months, and came on again in severe neuralgic fits. No immediate cause for this recur-

rence could be ascertained, except that the catamenia had failed to appear. Relief was twice obtained by covering the cicatrix with lunar caustic. This point was so tender at times, that the slightest touch produced acute suffering, which at one time was followed by general convulsions. The catamenia were regularly established about thirteen months after the original injury, and the neuralgia rapidly improved after that time.

Venesection is known to have often produced neuralgia, both in the arm and leg. A puncture of the superior maxillary nerve at the infra-orbitary foramen, made for the purpose of applying galvanism, has caused it. In some cases of neuralgia from puncture, it has been proved that the nerve was pierced or partially divided, and a complete division at the wounded part, or about it, has sometimes given relief. But it is not certain that a nerve is touched in all these cases. The analogy of other causes, such as cutaneous eruptions, leads me to doubt whether any inflammation or great disturbance in the circulation around a number of the most minute terminal fibres may not serve as an excitant, and whether, therefore, we need always suppose the wound to have reached a nervous trunk. Dr. Rowland mentions a person who had neuralgia from leech-bites, applied to a bubo.

Neuralgia seldom begins immediately after the wound, or rather, as soon as the pain caused at the time has subsided. Such a fact is not unknown. One man had a severe laceration on the thigh, leaving some filaments of the sciatic nerve hanging loose. Shooting pains, with spasmodic twitchings, came on in about four hours, and were followed by numbness, &c. All these symptoms were passed in nine days. The disease rarely presented so acute a form. In general, neuralgia following external injuries, begins after cicatrization, or even some months later. With a view to prognosis and treatment, it is very important to distinguish between those cases in which the symptoms come on within a few hours after the injury, and those in which they manifest themselves after the wound has healed. In the former, we have more reason to think a wounded nerve has occasioned the pains, and we may suspect a partial division of the nerve. An operation is much more likely to give relief in these cases. "It is always to be feared," says Mayo, "when the nervous symptoms have been slow in coming (and, therefore, have been present for many days), that they are dependent not more upon the injured point of the nerve than on an irritation involving its whole length." Some of those which immediately follow a wound may be presumed to be inflammatory; as in the above-mentioned case which followed laceration.

It is important to bear in mind that an injury which had not been suspected of having involved any particular nerve, and perhaps had occurred so long before as to have been forgotten, may still cause acute nervous pains. For example, Dr. Rowland mentions a girl, aged sixteen, who had paroxysms of darting pain in the *left* temple and side of the head; and upon inquiry it was found that several years previously she had received a severe cut over the *right* parietal bone, which was long in healing, and this spot had been tender ever since. A large uneven cicatrix was discovered, when the hair had been removed, and a blister over this part relieved the pain for several weeks. The pains may be much more distant from the seat of injury, and even tenderness of the cicatrix may be wanting as a guide to their true source.

Pressure upon nerves is a more common local cause. It may be made by some foreign body, a tumour, an enlarged or displaced organ, a curved spine, stercoral concretions, the passage of the foetal head, the pressure of crutches against the armpit, &c. In a neuralgia of the spermatic cord, pain was excited by flatus passing through the cæcum. Dr. W. E. Coale, of Boston,

witnessed a case of neuralgia, relieved on the appearance of a deciduous tooth, which had remained in the upper jaw till the person reached mature age.

Pressure by *bone* is a well-recognized cause. Sir Henry Hallford may be thought to generalize from his observations a little too broadly; but as he gives facts for his authority, we will not make this topic a bone of contention. He thinks that "the disease (*tic douloureux*) is connected with some preternatural growth of bone, or a deposition of bone in a part of the animal economy, where it is not usually found in a sound and healthy condition, or with a diseased bone." He gives four cases, all of them interesting, and three of them pertinent here. A lady, aged forty, suffered severely from *tic douloureux*; it was observed that the attacks were frequently preceded by uneasiness in one tooth, which exhibited, however, no signs of unsoundness. The tooth being extracted, a large exostosis was observed at its root; and the lady never suffered more than slight attacks afterward, and those very seldom. In another, recovery took place after the completion of an exfoliation from the *antrum maxillare*. In a third, there was exfoliation of the alveolar processes, and relief occurred only after an apoplectic seizure. This may have depended on disease within the cranium, as in the case of Dr. Pemberton, related in the same connection by Hallford, but which we may do best to consider under another head.

Tumours may form in the nerves, and become the radiating centres of neuralgic pain. Though not among the most common causes of neuralgia, still, tumours of nerves form an important part of our subject, and we will give a condensed sketch of the leading facts respecting them.

The only known cause of them is a wound or similar irritation of the nerve, at the point where they appear. Hence, they are divided into two varieties, the traumatic and idiopathic neuroma. They are generally ovoidal, their long axis parallel to the nerve, movable, not adherent to the skin. The majority of cases where but a single tumour occurs, are believed to be of traumatic origin; but under some unknown predisposing influence, many tumours, even hundreds, may exist in one person. The symptoms of neuroma, when seated in superficial nerves, correspond very well with those of neuralgia—constant sensations of tingling, &c., with exacerbations of acute, shooting pain, excited by atmospheric changes, disordered digestion, &c., as well as external pressure. The pain is by no means proportioned to the size of the tumour. It is more moderate at first, perhaps no more than a tenderness, with many ill-defined sensations along the course of the nerve. Traumatic neuroma is, of course, most common on nerves near the surface. In cases where a great many exist in the same person, they have been found in the nerves both of the sympathetic and cerebro-spinal systems.

The structure of these tumours is pretty uniform. They are probably never cancerous, and never act like malignant disease. Those coming from injury are generally solid, but either variety may be encysted. The solid tumour begins in the neurilemma, or cellular sheath of the nerve, or else in one of the finer sheaths enveloping particular fibres of the nerve; the nervous threads may generally be traced through it, by careful management; those which are not involved in it are generally pushed one side, or some of them are spread and flattened out on all sides, according to the exact situation where the growth commences. The neurilemma by its compression gives the ovoid shape. The section of a solid neuroma shows it to be fibro-cellular and homogeneous; it cuts smooth. Those in the shape of a cyst contain some kind of liquid. Rokitsansky believes they serve as *bursæ mucosæ*.

A bulbous enlargement of this shape and structure forms on the nerves

after amputation, usually without occasioning pain. But some of the worst known instances of neuralgia have followed amputation, so that patients have more than once submitted to reamputation, for the chance of relief. "The adhesion of the end of the nerve to the cicatrix of the stump; its irritation by osseous spiculæ springing from the extremity of the sawn bone; the including of a nervous filament in a ligature; the occurrence of a conical stump, such are a few among the many circumstances which have been stated as the occasional causes of these terribly painful tumours."¹

Carious teeth are believed to be a very frequent cause of tic douloureux. From my own observation, I should not expect much good from extracting teeth, unless the pains occupied the very nerve whose branches pass to a diseased tooth. Brodie says, in his lectures in the *London Medical Gazette*, that he never knew a case where genuine tic douloureux was relieved by the extraction of a carious tooth; and a very experienced dentist informed him that he had arrived at the same result. Still, it cannot be denied that neuralgia, even at a distance from the face, is sometimes caused by carious teeth. Bell met with a case "in a gentleman, who had for some time suffered from a neuralgic affection of the right arm; the paroxysms were subsequently observed to commence with pain in the second molar tooth, and to be excited whenever it was pressed or otherwise irritated. Upon the removal of the tooth, the pain disappeared." A pain running up the left arm to the shoulder, chest, and cardiac region, has been immediately cured by extracting a carious molar.

Neuralgia has sometimes been produced by stretching of nerves, without any laceration or wound, as where a heavy weight has been suddenly brought into such a position as to be supported by one arm. Sir Everard Home reported in the *Philosophical Transactions*, for 1801, the case of a gentleman, who received a violent sprain of the thumb by the weight of his body being thrown upon it, in saving himself when he was nearly thrown off of his horse. The attacks of pain extended up the arm; and the case proved very obstinate. A nerve was divided without obtaining a cure.

Various irritations and eruptions of the skin are sometimes curiously associated with pains in the neighbouring nerves. The congestion, or peculiar state of circulation in the minute vessels, which immediately precedes the appearance of eruptions, is more commonly marked by itching and diffused burning heat, but sometimes assumes a properly neuralgic character, particularly in herpes zoster, also sometimes in eczema and impetigo. These pains may last through the eruptive period, aggravated by everything that heats the surface. The most obstinate pains, I believe, that are connected with herpes, are those which follow its disappearance, and which are noticed by Dr. Bright in his lectures as particularly refractory to treatment. A recent writer, Marriott, mentions that he has observed many cases, which all subsided spontaneously after some weeks or months.

Carbuncle may cause neuralgia, in near or distant nerves, as shown by a case which was long under my own care. The carbuncle was a large and bad one, seated over the left scapula. Its appearance was preceded by severe pleurodynia on the same side; at the height of the suppuration there were paroxysms of pain in the subscapular nerve; and at that period the following symptoms first appeared. Pain and numbness were felt down the left ulnar nerve, particularly at the point where it passes beneath the inner condyle, and from the inner side of the wrist down the little finger, and half the next. The pleuro-

¹ This quotation, as well as most of the account of neuroma, is from an excellent monograph, "On the Pathology, Diagnosis, and Treatment of Neuroma." By Robert W. Smith, M. D., &c. Dublin, 1849.

dynia was very distressing, was always relieved by soothing applications to the carbuncle, and never so severe after that was freely opened. It disappeared long before healing was effected, but the pain in the arm continued. The spot was quite slow in healing, being exposed to continual fretting by the motions of the scapula; and while it continued open, the pains down the arm were constantly increased by anything that irritated the little ulcer, and relieved by soothing applications. After complete cicatrization, for a month or two if not longer, pressure on the scar would cause painful and strange thrilling sensations down the ulnar nerve. A second, comparatively small boil, on the corresponding point on the right side, caused much slighter and very transient suffering of the same kind, at the same points of the right ulnar nerve.

Inflammation of mucous membranes has been known to excite neuralgia in those nerves which supply the inflamed membranes. This has been observed in influenza particularly. I have just had a case under treatment, where the fits of pain shooting over the whole scalp and temple, recur about three o'clock every morning, with a good deal of regularity, and last till late in the forenoon, when they seem to be relieved by a copious discharge from the pituitary membrane. The pains were confined to the region of the frontal sinus—a severe headache, till the influenza had lasted about five days. There are some curious notices in authors of similar pains, caused by larvæ of insects lodged in the frontal sinus.

Neuralgia may have its origin in the nervous centres. It would be obviously out of place to give an account of all the affections of the brain or spinal cord in which it may arise as a symptom. Softening of the brain is more often indicated in its earlier stages by spasmodic contractions of the muscles, particularly rigid spasm, and by prickings or numbness; sometimes these are preceded or accompanied by shooting pains in the limbs. I do not know that these pains ever follow exactly the track of a nerve. Like symptoms are apt to be among the earlier indications of softening of the spinal cord.

Neuralgia is thought to be sometimes a symptom of cerebral congestion. Interesting cases are related by Dr. Copland, in his *Dictionary*. One, in a gentleman aged about fifty, was treated by him as depending on an active determination of blood to the head, and disappeared. In about two years it returned, and was followed by apoplexy and death. A lady about the same age was relieved by cupping on the back of the neck, but the pains soon returned, when carbonate of iron was prescribed by another attendant; after this “she immediately became maniacally delirious, afterwards hemiplegic, and she soon afterwards died.” An autopsy showed intense congestion and signs of previous inflammation.

Similar statements will be found in the writings of Dr. Armstrong. He regarded congestion, or disturbed action in the vessels of the brain, as the most common cause of *tic douloureux* and of periodical headache.

In the *London Journal of Medicine*, August, 1850, is a case of pains which were unaccompanied by any signs of inflammation, and considered and treated as neuralgic; situated in a limited spot near upper and inner margin of right ilium. An unnatural fretfulness was the only proper cerebral symptom. The liver was enlarged, so as to be felt below the ribs, and this was thought to explain the neuralgia. These symptoms began in the autumn, the pain suddenly subsided about the middle of the following April, and two weeks after an attack of apoplexy occurred, which was fatal in five days. Autopsy revealed extensive softening of left side of cerebrum, with effusion of blood. The cessation of pain was probably owing to the progress of the disease in the brain.

Sir Anthony Carlisle mentions that a lady was relieved of infra-orbital neuralgia, by three bleedings within a week of one another. First, sixteen ounces were taken; three days later, twelve ounces; three days later, sixteen ounces again. She was entirely free from pain, and never had any return of it. She died two years after this, of apoplexy. These facts should not be forgotten in estimating the gravity of this disease, and in determining whether to give tonics.

In the case of Dr. Pemberton, there was disease of the bones within the cranium—an unusual thickness of the os frontis above its sinuses, and near its junction with the parietal bones; and in the falx, near the crista galli, there was “a small osseous substance about three-eighths of an inch in length, rather less in breadth, and about a line in thickness.” After amputation, performed for neuralgia in the leg, the posterior surface of the spinal cavity has been found studded with cartilaginous and bony deposits.

It would be interesting to obtain a series of facts, to show how frequently neuralgic pains are connected with a tendency to serious disease in the nervous centres, and how far they may be premonitions of such disease. In persons approaching that age when apoplectic and paralytic affections may be feared, obstinate sciatica, not traceable to any obvious external cause, should always call our attention to the state of the brain. Facial neuralgia, too, has sometimes passed into severe periodical ache in the inside of the cranium, followed by cerebral symptoms. Before leaving this subject, we will quote the suggestive remarks of Copland, from whom we have already given cases in point. After referring to the external physical causes, cold and wet, &c. he says: “When neuralgia cannot be imputed to any of these causes, when it is occasioned by less manifest causes, when there is reason to suspect that organic lesion exists within either the cranium or spine—protracted disease may be expected, and the supervention of another malady, generally resulting from the progressive increase of the primary lesion, and of still more fatal tendency, may be anticipated although at a more or less remote period. In a very large majority of these cases, neuralgia terminates in some related malady, in a convulsive, epileptic, apoplectic, or paralytic seizure. From either of these the patient may recover partially, rarely completely, and be again attacked, but he seldom experiences the neuralgic affection, or at least in the same form or degree of severity. Of the several maladies into which neuralgia passes, palsy, generally in the form of hemiplegia, sometimes in that of paraplegia, when the lower extremities have been the seat of the affection, has been that most frequently brought under my own observation. Next to this, apoplectic, or apoplectic joined with convulsive seizures, have been noticed.” In cases I have witnessed, where neuralgia was followed by palsy, I have not seen any relief ensue, except so far as the sensorium was blunted for the time against the perception of pain.

The following remarks of Simon, one of the ablest recent writers on pathology, are too interesting to be overlooked. He gives no specific facts to confirm them: “It is in these diseases of subordinate centres—chiefly of tertiary centres—that *neuralgia* so commonly arises; for by this term, when it is properly used, we denote the subjective experience of pain in a part where there is no equivalent objective disease; and in most of such cases, the disease is not in the nerve-tubules, but amid the gray nerve matter of the secondary or tertiary centre”—*i. e.* the cerebellum, optic thalamus, corpus striatum (secondary), or gray matter of the spinal cord, or sensitive ganglia (tertiary).

As this essay is intended to have a practical character, we will not go deeply into the vexed question of spinal irritation as a cause of neuralgia.

Certain cases of this disease in the face, and more particularly in the intercostal nerves and abdomen, are connected with tenderness alongside the spine—often confined to the surface over those intervertebral foramina which transmit nerves to the parts affected by pain. This tenderness is exhibited on pressure, or on applying heat or cold, as for instance by a hot sponge or the cold hand passed down the back; and also after some motions of the limbs or body. Pressure here will sometimes excite the painful or other peculiar sensations in distant parts. There is often a little oedema about the tender spots; and it is said the skin is at times more easily irritated by such applications as tartarized antimony than the surrounding parts. Lastly, many such complaints are relieved, or perhaps permanently cured, by leeching or counter-irritation over the neighbourhood where tenderness exists.

These facts have been ascribed to a state called “spinal irritation,” of which only a very vague idea can be formed. It has been considered a very moderate sort of inflammation—proved to exist by the tenderness on pressure, and by the very prompt good effects of leeching, blistering, &c. As to this theory, it is enough to say that no pressure can, as a glance at the anatomy of the parts will show, be transmitted from our fingers on the outside to the spinal marrow itself. And the effects of treatment are by no means so constant as to make a fair ground for pathological inferences. They show, we think, that there is a state—temporary congestion it may be—of these parts of the spinal cord, which causes or keeps up the neuralgic, and other distant affections. But the relief is both very uncertain, and sometimes so surprisingly prompt as to show that some other condition than inflammation has existed.

The tenderness itself has often a neuralgic character. It is in many cases excited by a slight brush or change of temperature more than by firm pressure. Pinch up a fold of the skin over the intervertebral foramen, and in many of these cases the local sensitiveness will be evinced, and, what is more, the distant neuralgia will be waked up. This result is not constant, it is true, but neither are any of the phenomena of spinal irritation. We have seen (p. 418) that tenderness on pressure usually occurs, in neuralgia, at those points where the nerve issues, either from bony foramina, or through the mass of muscles, to come nearer the surface. All the facts of tenderness, &c. prove, then, is, that the posterior branches of the spinal nerves in question are affected together with the anterior, and that very probably the ganglia contained in the cord itself are the media of communication between them. It should be added, to illustrate the inconstancy of all these facts, that many of these patients have numerous tender points in different regions, a general sensitiveness—that the same spinal tenderness may be found without any neuralgia, or any of the other complaints which modern theorists have traced to the same source—and, conversely, that just such symptoms, apparently owing to some peculiar state—call it irritation if you please—of the spinal marrow, are found without any of the spinal tenderness. A man was in my office yesterday, with quite a variety of visceral neuralgia, which, according to his story, take turns with a chronic eruption on his skin; there was a fine assortment of the remote effects of spinal irritation, but no flinching when I examined his back. The case was no remarkable one.

Let us try to shun hypothesis, and state what is most important in this connection:—

1. Pains in the course of the anterior branches of spinal nerves, and also spasmodic and various nervous affections, sometimes coexist with pain and tenderness in the corresponding posterior branches; and the tenderness is frequently, as we might expect, at that point where the posterior branch issues from beneath the muscles, to become more superficial.

2. In addition to this, there is sometimes disorder in some internal organ, which is probably primary, the spinal cord serving as the medium through which irritant impressions from this organ are conveyed to the nerves affected.

3. Some persons have, with spinal tenderness and neuralgia, a good deal of suffering in bending, stooping, or even holding so hard as to make the ligamentous stays of the vertebræ tense. I have seen such cases proceeding from a strain, as in trying to hold a runaway horse; and some of them appear to be rheumatic, the ligamentous and adjoining white textures being probably involved.¹

4. In determining whether a painful affection, say within the abdomen, be inflammatory or not, we may sometimes infer its neuralgic character from the presence of this neuralgic state of the posterior spinal branches.

Beside functional derangements, particularly of the uterus, many organic lesions may produce spinal irritation—as tubercular deposition in its early stages, and wounds of nerves.

As to neuralgia from disorder of the digestive organs, I can say little from my own observation. Sir Charles Bell has given some five cases of *tic douloureux* successfully treated by croton-oil, and was disposed to infer that they depended on derangement or overloading of these organs, which he easily explained by the connections between the trifacial and sympathetic nerves. Many English physicians of the schools of Hamilton and Abernethy, attach much importance to the treatment by purgatives. It is certain that neuralgic attacks may be excited, in persons subject to them, by indigestible food in the stomach or bowels, and by the passage of cathartic medicines. From the teeth to the rectum, every part of the alimentary canal may make its disturbances felt in this manner. In a case of stricture of the œsophagus, every attempt at swallowing excited acute pain in the little finger. Pain in the lower limbs has been known to come on violently after dinner, and be relieved on vomiting up some ice-cream; also to be immediately removed by swallowing an alkali, by removing fecal accumulations, and by replacing a protruded hemorrhoidal tumour. Many persons of sedentary habits have their *tic douloureux* usually aggravated by allowing the bowels to become confined, and severe attacks relieved by free evacuation. I have known one who avoided sweetmeats of all kinds, from having observed that they excited paroxysms of facial neuralgia. Possibly, this person had carious teeth, which produced the pains.²

The mention of nervous pains in the lower limbs from hemorrhoids naturally reminds us of like cases caused by distension of the bladder and the passage of calculi. I have seen the same after lithotomy. The patient, a man of 70, suffered within less than a week after the operation, from a painful swelling of the thigh and leg, resembling phlegmasia alba dolens, which subsided in five or six days. For a few months after the subsidence of this, he was distressed by fits of lancinating pain down the long saphenous nerve.

Rheumatism undoubtedly depends on a material cause circulating in the blood, probably lactic acid evolved in the transformations of the tissues. It invades all the membranous forms of areolar tissue, from the fibrous textures about the joints to the serous membranes. The sheaths of nerves belong to this class of tissues, and may be the seat of rheumatism. Were I to take my own observation as the only guide, I should be surprised that any doubt of this existed among practical observers, particularly as regards sciatica. This and other forms of neuralgia are common among those who are much

¹ See Wood's Practice, vol. ii.; art. *Spinal Irritation*.

² For interesting cases in point, see *Edin. Med. and Surg. Journal*, April, 1850. (Communication by Dr. Stark.)

exposed to wet and cold and atmospheric changes. Symptoms characteristic of neuralgia not unfrequently supervene in the course of acute rheumatism, toward its close. The analogous affection of temporary paralysis of particular parts, as the hand, without any signs of cerebral affection, has also been observed in the same circumstances. The painful sensations common in persons subject to rheumatism, at times when they are comparatively well, are sometimes indefinite in their seat, but in some cases follow the well-known course of some nerve. Rheumatism attacking the neurilemma, in an acute form, is known by the unusually severe pain, gnawing and piercing sensations, and by its haunting a particular seat, at the same time having marked remissions. I am glad to see that the frequent occurrence of rheumatism in this seat is recognized in the latest excellent work on this subject, that by Fuller of London. The following is the commencement of his chapter, "On Sciatica, and other forms of Neuralgic Rheumatism." "When rheumatism attacks the nerves or their fibrous envelops, it causes pain which follows the course of the nervous trunks, and extends along their several branches. The pain is bounded by such narrow limits, and can be traced so clearly following the track of the larger nerves, that it cannot be mistaken for pain affecting any of the other structures."

Some of the most intelligent clinical observers of our day have pointed out affections of the spinal cord and of the nerves, depending on the gouty diathesis. Dr. Graves has adduced cases tending to show that "gouty inflammation of the nerves and their neurilemma may in process of time extend to the spinal marrow and its investments, and give rise to the derangements of the latter, terminating in ramollissement and structural degeneration." In the *Edinburgh Medical and Surgical Journal*, Jan. 1854, Dr. Begbie gives numerous illustrations of the many forms of gout, among which, besides nephralgia, he mentions three cases of neuralgia in the lower limbs. One, a case of sciatica, was treated with colchicum and neutral salts, and complete relief was quickly obtained on two occasions. Another case, also a sciatica, was of a more asthenic character, the gouty diathesis "more suspected than proved or acknowledged," and yielded to quinia combined with colchicum.

For myself, I have only suspected this connection of neuralgia with gout; in some cases from finding no other ascertainable cause of neuralgic pains; from the hereditary tendency to gout or gravel in a patient's family, and from the good effects of colchicum. The neuralgiæ I have seen under these circumstances were facial (accompanied by inflammation of the articulation of the lower jaw on the same side), and visceral pains somewhat resembling colic.

Syphilis has been pronounced a cause of neuralgia, on account of the occasional cures by mercury. There are few operations of medicine more reliable than the good effects of iodide of potassium in syphilitic headache; and in some cases which were relieved by this medicine, I have been unable, on careful examination, to detect even any commencement of puffy swelling. Were they neuralgic, or are we to assume that there was some brooding inflammation of periosteum or bone? From their lancinating character, and their radiating from a well-known centre of neuralgic pains, near the parietal protuberance, I am disposed to consider them of this nature, in a case lately under my treatment.

The metallic poisons, lead and mercury, by their slow absorption into the blood, produce affections of a neuralgic stamp. The "lead-arthritis" of Tanquerel is a disease remittent, subject to severe paroxysms, the pain being little dependent on motion of the part, and not increased, but oftener dimi-

nished by pressure. The scalpel shows no correspondent anatomical lesion in the limb, or the nervous centres; lead has been found in the muscles of the limb. The diagnostic marks between this and "common neuralgia," named by Tanquerel, do not characterize a distinct disease. His observations include 1,217 cases of lead colic, 755 of "arthralgia," 127 of paralysis, 72 of encephalopathy. Lead-colic is probably a compound of muscular paralysis and neuralgia, having its seat in the bowels; so that by far the larger number of the cases, where lead poisons the nervous system, partake of a neuralgic character.

Malaria is a well-ascertained cause. Neuralgia prevails in marshy districts and damp climates, and particularly in some of the haunts of fever and ague. A condition resembling the cold stage of intermittents has been noticed at the beginning of the neuralgic paroxysm, marked by a similar character of the pulse, and a sensation of cold, either local or general, followed by local heat. Neuralgia is often periodical, as regularly so as fever and ague, and with the same intervals. The same persons have often had ague and neuralgia alternately; and in particular, many who have suffered first from severe intermittent fever have afterwards had neuralgia. Bark and its preparations, and sometimes arsenic, have rapidly cured these periodical cases.

The following is quoted from Macculloch, in his *Essay on Marsh Fever and Neuralgia* (London, 1828):—

"In this case, the situation was so decidedly subject to malaria, that scarcely an individual, out of many different families which had resided in it, had escaped intermittent at some period of their stay. In one season, and in one family consisting of twelve or fourteen persons, the following were the effects on as many individuals: one tertian, one double quotidian headache, one diseased spleen; in one individual, aged only eighteen, a temporary hemiplegia, with obscure quotidian, and symptoms of diseased spleen; a regular neuralgia of the face, of double tertian type. In a following distant season, and in some of the same persons, there occurred palsy of the face, with imperfect speech—an attack lasting beyond a week, and replaced by quotidian neuralgia (tic); a double tertian, common intermittent, terminating in a quotidian or double tertian neuralgia; a quotidian with neuralgia in the shin-bone; the same patient having had, in a preceding season, a common tertian so obscurely marked that he was ordered to Italy for a consumption (a consumption which was cured by two ounces of bark and a change of place to ten miles distance); and, in a following one, having been attacked again with a double tertian, of which one fit was attended by neuralgia of the skin, and the other by a headache."

It is well to mention that the disease is not always of malarious origin when distinctly periodical. Many cases, even coming from a permanent organic cause, recur regularly, with the same intervals as the common forms of intermittent fever.

Lastly, whatever vitiates the blood, by withholding healthy nourishment, or interfering with healthy assimilation, may be the source of this painful disease. Anæmia itself is a most frequent cause of nervous disturbances, both of movement and sensation. They have been observed in limbs after ligation of the main artery, in women blanched by flooding, and in the anæmia of Bright's disease, and chlorosis. Many of these phenomena have been best investigated by Dr. Marshall Hall, to whose *Essay on the Effects of the Loss of Blood*, I may refer.

But the constitution of the blood, and healthy state of the nervous system, may be impaired by unhealthy modes of living as well as by actual disease.

The debility caused by neglect, voluntary or forced, of the great rules of living, is a most common influence predisposing to neuralgia. Our bodies cannot be kept sound without enough suitable food and oxygen, with exercise to quicken the reception of these elements into the system, and to distribute them in due proportion through our organs. The habit of sewing too closely, and the use of such articles of diet as give a temporary unnatural stimulus in the place of substantial nutriment—tea and coffee in particular—are the hygienic errors most needing to be noted.

III. The subject of this essay (as at first announced) requires something to be said of the "nature" of neuralgia. Our knowledge on this question is so slight and unsatisfactory that we shall devote very little space to it. In the majority of cases, where dissection has been had, no morbid changes have been found in the nerves. When found, they have been various, and not always in the part where the symptoms appeared. The knowledge derived from the symptoms and course of the disease is almost equally negative; we learn what neuralgia is not, and some of the laws it observes; but do not know what it commonly is. In truth, while we do not know the nature of the processes by which healthy sensation is effected, how can we understand the mechanism of diseased sensation?

1. Some rare examples of neuralgia depend on inflammation of the nerve. We related a case at page 421, which shows this by its history. In other instances, the nerves have presented redness, serous effusion among their filaments, bloody infiltration, enlargement, hardening, softening, or finally purulent effusion, indicating that inflammation had existed, sometimes acute and at other times chronic. A remarkable instance of the acute kind is mentioned by Gendrin. In this case, and the one just before alluded to, numbness in the parts below the inflamed part was a prominent symptom. We shall presently see that Fuller mentions as signs of effusion in sciatica, "a dull, aching, benumbing pain in the limb, causing it to feel swollen." Simon says: "It is practically of great importance, as a point conducive to accurate diagnosis, to notice whether the neuralgic affection be or be not accompanied by anaesthesia (or numbness.) Attention to this point will often enable us to give confident prognosis as to the issue of a particular case by determining whether the symptoms are such as to imply destructive disease in the nervous apparatus of the part. Neuralgia of long duration can hardly exist separately from anaesthesia, as a result of such disease." Other more obvious signs of inflammatory neuralgia are tenderness on pressure over the whole course of the nerve, felt enlargement of the nerve sometimes observed, and the greater fixedness and constancy of the pains.

But the inflammatory character of this affection is seldom shown, either by its symptoms, the effects of treatment, or *post-mortem* examination. For discussions of this whole subject, we may refer to the able essays of Drs. Oliver W. Holmes¹ and Richard Rowland.²

2. In some forms of neuralgia, we may convince ourselves that it arises from a morbid state of the blood, in particular from a poison circulating in it, which we may believe from analogy—perhaps in the case of lead it will be proved by analysis—comes into direct relation with the nerve-substance or neurilemma.

3. We find neuralgia in certain instances a manifestation of disease in the nervous centres; and we may feel that we know something of its nature,

¹ Boylston Prize Essay. Boston, 1838.

² A Treatise on Neuralgia. London, 1838.

when we connect it with those laws of the nervous system by which affections of the nerve near its origin are referred to points along its course.

4. Those cases in which disturbances of one organ excite pain in a remote part, through the means of nervous connections, are illustrations of what is called *sympathy*. But this term only serves as a convenient name, like the x or y of the algebraist, to represent an unknown thing; and though we may study its phenomena, assort them under different heads, and generalize our statements into laws, we are still ignorant of its nature. Interesting methodical accounts of the phenomena of morbid sympathy may be found in the recent works of Henle and Simon on General Pathology.

IV. *Treatment of Neuralgia*.—We have dwelt at length on the conditions under which neuralgia arises, because they afford the most important hints for treatment. Many of them admit of being removed or lightened. It is true that the removal of the apparent causes may not cure the disease, yet even here this knowledge is useful, because the continued operation of the causes may be stopped, and also because powerful nervines have a great control over those cases in which the pains persist after the condition that first excited them has ceased. But there are generally several causes or influences that keep up the disease, and a physician's tact will be best shown in detecting and disentangling them. Thus there is often a general state, such as anæmia or the rheumatic diathesis, making a person liable to nervous pains, and some local exposure or accident determines the place where this constitutional cause shall take effect. If our management be not founded on a comprehensive understanding of the case, its success will be at best very uncertain.

Let us develop these ideas a little in detail. Exposure to cold and wet must be avoided. A person living in a damp and chilly situation, or obliged to work in the water, can hardly expect a cure, unless he can change his business, and go to a dry and comfortable dwelling, or hospital. This applies most strongly to sciatica, yet not exclusively. The best writer on neuralgia of the face, Halliday, urges the same measures, an omission of which may, he says, compromise the good effect of any other treatment. The patient should be taken also from a situation exposed to marsh miasmata. Non-conducting substances should be worn over the affected part, if possible. Flannel and silk are useful, and in sciatica, buckskin drawers. Flannel covered with oiled silk is worn by some, attached to a sort of visor, to prevent, if not to cure, attacks of facial neuralgia. The usefulness of many plasters depends upon their protecting the surface against changes of temperature.

The existence of rheumatism, gout, and the various poisons in the blood, should all occur to the mind as possible causes. We cannot give in full the symptoms or treatment of either of these diseases, yet the following sentences of Fuller are apposite enough to be quoted. They are written with a special reference to sciatica: "If the patient is thin, pale, sallow, and extremely sensitive to atmospheric vicissitudes; if he has experienced pain, or threatenings of pain, in other parts of the body; if, at some former period, he has suffered from rheumatism affecting the joints; and, above all, if his present attack is the result of exposure to cold and damp, the disease under which he is labouring is rheumatic, and is to be relieved by vapour-baths, guaiacum, alkalies, and similar remedies. On the other hand, is he stout, florid, and a free liver, taking little exercise and sleeping much; is he plagued with heartburn, acid eructations, and occasional lowness of spirits; or has he

previously suffered from gout, his malady is certainly of gouty origin, and is to be cured by colchicum, alkalies, and alteratives. Again, is he cachectic, and out of health; has his throat been ulcerated, or his skin disfigured by blotches or eruptions; has he taken mercury, or experienced pain in his bones, the mischief is probably due to a syphilitic taint, and is to be cured by sarsaparilla, with iodide of potassium."

In the pains from syphilis, benefit is also derived from nitric or nitromuriatic acid washes.

When an individual, once strong, has become weak and pallid, without a rheumatic diathesis, and we recognize anemia as a source of the neuralgia, we have a case for the use of iron. The strength and size of pulse, appearance of red blood in the complexion, and presence or absence of other symptoms that are known to be often produced by general anemia, are to be inquired into. Iron is inappropriate, not only in full-blooded persons, but also in those who are predisposed to inflammation or irritation of the stomach and bowels. Its best effects are seen in cases where no local cause is known. Its effects on the action of the bowels are different in different persons. In moderate doses it is apt to constipate, and require some cathartic joined with it. But only a small part of the large doses of the carbonate of iron is absorbed. When a drachm or more is given, most of it passes off in an insoluble form, the sulphuret, and by its mechanical irritation in some persons it promotes peristaltic movement. The large doses, therefore, cannot be more useful than moderate ones, by their increased power of furnishing iron to the blood. Several authors who recommend the carbonate, empirically, insist on the greater efficacy of large doses; and perhaps this is owing to a revulsive action on the bowels. Thirty grains three times a day are often given; some failures are attributed to this *small dose*! It is said that half an ounce every four hours can be well borne, producing no inconvenience unless some feeling of weight in the stomach, as long as the bowels are kept freely open. In employing the carbonate, I have usually given not more than five to ten grains at a dose, combined commonly with powdered rhubarb and an aromatic (cinnamon).

After endeavouring to give some indications for the use of iron in what we may call the *rational* treatment, we must glance at its *empirical* use. Like most other drugs, it has been used too indiscriminately in neuralgia. The subcarbonate of iron was first distinctly brought forward, as a cure for neuralgia, by B. Hutchinson (London, 1822). He reported twenty-seven cases, all but two or three of which were cured, under a course in which this was the leading remedy. In those few, it gave more relief than anything else. Though it has been less uniformly useful in the hands of others, still, it has kept its place as one of the most valuable remedies.

Sir B. Brodie says of the use of iron: "We have never known any benefit to accrue from increasing the dose of the carbonate beyond a drachm thrice daily." He insists on the occasional administration of a purgative to prevent accumulation in the colon.

Whatever the nature of spinal irritation, there is reason to believe it means something, and that this something keeps up neuralgic and other nervous complaints. We must dwell a little on remedies applied over the spine. Simple rubbing and shampooing, even the pressure of a warm hand over the seat of tenderness, and anodyne liniments, give great relief. As a palliative, the following is excellent: one part of solid camphor and chloroform, each, mixed with two parts of olive oil, making a liniment. The belladonna plaster is of more permanent benefit. These harmless measures ought to be tried, unless symptoms are very severe, before leeching and blistering.

After the name of spinal irritation came into vogue in England, the use of leeches and counter-irritation over the tender vertebræ became very common, almost a national peculiarity, which has followed the Anglo-Saxon destiny to this side of the Atlantic. The little book of Teale, written to enforce this doctrine, has gained a reputation in both countries; the edition before me being printed at Concord. It recounts twenty-one cases of external neuralgia, angina pectoris, and other nervous affections, accompanied by some spinal tenderness, and relieved almost constantly by leeches and blisters over the spine. His cases show that these affections may be very much mitigated by such appliances, and some of an acute character even cured. But the long-standing cases were treated by so many different means at the same time, that it is hard to judge how much the local measures aided in a permanent cure, where such was obtained. A great many of these affections occur in weakly persons, who cannot well bear repeated loss of blood, which increases the general irritability. For myself, I have seen *permanent* good come from local depletion only when the cases were very recent. Persons who have suffered long may, however, be relieved of suffering, and, on this account, leeching and cupping may be, on the whole, beneficial in some circumstances. The harsher external applications, according to the best observers, have often failed; I have seen them followed by an increase of spasmodic disturbance, not, that I now remember, of neuralgic suffering.

Sir Benjamin Brodie, in his able lectures on local nervous affections, has raised his commanding voice against the indiscriminate use of these applications, particularly in young and nervous females, in whom we commonly find the symptoms in question. He believes that many are made invalids for life by the repeated losses of blood, each of which may have given relief at the time. He condemns in the same way the practice of enforcing a recumbent posture, and establishing a discharge over the spine, whether by tartarized antimony, caustics, or setons. Good diet, air and exercise, agreeable occupation of the mind, cheerful feelings, with some tonic medicines, are, he says, the best remedies. He also advises the use of belladonna plasters, which I have already spoken of.

From my own limited observation, I am convinced of the truth of Brodie's statement, and that many patients are kept invalids under treatment for "spinal complaint," who would be able to lead a comparatively active and happy life. Have we not all seen such cases? Granting that the condition of a portion of the spinal cord is one of congestion, or too great fulness of blood, is it not a result and indication of weakness? The phenomena of blushing, a result of moral weakness, have been very happily employed to illustrate this kind of congestion, which springs from physical weakness, or from moral and physical combined. To cure it, says an excellent reviewer of Brodie, "we should not leech and blister, or enjoin rest, but we should expose abundantly to fresh air, insist on regular and plentiful exercise, with sufficient intervals of perfect rest, feed with a most generous and nutritious diet, and with but little apprehension, in the majority of cases, of failing in effecting a cure."¹

Those who consider neuralgia to be very often a result of deranged digestion, will insist much on the management of the digestive organs. I have already mentioned some cures reported by Bell, &c. When an overloaded state of the primæ viæ is suspected, emetics and cathartics may be useful. I have read of remarkable cases where purgatives given for some days, with

¹ British and Foreign Medical Review, July, 1841.

no good effect for awhile, have at last brought away accumulated matters, and given immediate relief. In sciatica, they are often successful. The abdomen should therefore be examined, in any case where constipated habits, with any fetor of breath and loaded tongue, set our suspicions on this track. The following is an outline of treatment which has been very useful in my hands, especially in some cases of dorso-intercostal neuralgia of the left side, where the complexion was muddy, and tongue coated. A blue pill every fifth day, followed by a saline cathartic; extractum taraxaci in pills—say six a day; anodyne applications outside; bitter tonics after pain was removed, and a plain, nutritious diet through the whole period. One case was remarkable for having been aggravated by abstinence from meat or other hearty food, and for the prompt disappearance of symptoms under this treatment.

Dr. Hunt, who gives the most rational advice as to management of the stomach and bowels, ascribes many cases to atony in these viscera, and recommends arsenic after evacuants, to be continued until pain is relieved, and then some tonic to take its place. He combines the arsenic with camphor, or some sedative; or, in case of acid stomach, with bicarbonate of soda, giving small doses of liquor arsenicalis (four minims three times a day at first, increased to *ten*.)¹

I have nothing interesting to add as to the treatment of other constitutional causes of neuralgia, and will next speak of indications drawn from local causes. Several cases have already been mentioned, where neuralgia was relieved or cured by treatment applied to old scars, &c. A complete removal of the cicatrix by the knife has done this most effectually; and when the scar is tender, pressure on it exciting the lancinating pains, and the situation admits, this is the best remedy. In other situations, as on the scalp, a crucial incision or cauterization may be substituted. A line of cautery carried round the cicatrix will sometimes give temporary relief, and may be advantageously practised at the same time that the cicatrix itself is converted into a slough. This treatment has often succeeded.

"In neuralgia depending on cutaneous eruptions," says Rowland, "relief may often be effected by touching the vesicle or pustule with lunar caustic. In herpes zoster, for instance, I have removed the severe neuralgic pains almost instantly by this means. Sometimes in these cases, one or two vesicles are pointed out as the chief source of the suffering; but, in general, it is better to apply the caustic to the whole of each group, or to cover them with a strong solution of this substance."

Neuroma on superficial nerves is said to have sometimes disappeared spontaneously; and, in some recent cases of an inflammatory nature, arising from injury, leeches are stated (by Frank of Turin) to have succeeded in dispersing it. But it usually presents itself to observation as a chronic disease, curable only by operation. The safest and most eligible mode is to cut away both the tumour and piece of nerve to which it is attached. The tumour is usually too closely implicated with the nerve-fibres to be dissected out. In one instance, where a large tumor was dissected out from the axilla, death ensued, and there was no evident cause for death shown on *post-mortem* examination except inflammation of a nerve.²

Neuralgia after amputation is one of the most discouraging varieties. It has returned after three successive amputations of the same limb, and after the sciatic nerve had been exposed and an inch and a half of its length cut

¹ Braithwaite's Retrospect, p. 10.

² For further directions, consult Mayo's Pathology.

out. It has been cured in one instance by acupuncture, and in one by quinia.

Indications for treatment may be derived from the type of the disease, which may be *inflammatory* or *periodical*. Neuritis may be known by its acute course, by tenderness, perhaps swelling over the nerve, and numbness and thrilling sensations, with little intermission; sometimes by spasms in the muscles, and the presence of some fever. General bleeding is seldom required. Dr. Rowland mentions having procured relief by it in a case of sciatica. Leeches, anodyne fomentations, and poultices, were used with best results in the cases best recorded (those of Martinet). Immersion in warm water, and irrigation with it, as practised in a Boston hospital, have both had very kindly effects. Dr. Holt, in commenting on some cases which he considers inflammatory, says: "Cold applications in these cases are commonly agreeable and beneficial, as a means of relief. The application of ice, or cloths wet in cold water, is often a very valuable auxiliary in this form of the disease."¹

The writer on rheumatism, Fuller, from whom we have already drawn quite freely, recommends means particularly to meet the condition of effusion within the sheath of the (sciatic) nerve. The signs of this effusion he thus enumerates: "When a patient who is suffering from sciatica complains of a *dull, aching, benumbing pain in the limb, causing it to feel swollen*; when this sense of numbness and increased bulk has succeeded to pain of greater intensity, accompanied by cramps and startings of the limb; and more especially when, in addition to these symptoms, there is more or less inability to move the limb, inability arising from loss of power, and not as a result of excessive pain," &c. In these circumstances, he recommends that measures be taken for the specific purposes of checking further effusion, promoting the absorption of that which exists, or mechanically evacuating it. For these purposes he uses cupping and leeching, if the effusion is supposed to be recent. In cases of longer standing, he uses long and narrow blisters along the track of the nerve, dressed with mercurial ointment, or sprinkled, if necessary, with powder of pure morphia, also mercury internally. In somewhat obstinate cases, when inflammation has gone by, and only its result, effusion, exists, he recommends acupuncture, to *mechanically evacuate* the fluid. "Six or eight pairs of needles, specially adapted for the purpose, are carefully inserted into the thigh, along the course of the sciatic nerve, the object being to puncture the neurilemma, and thus to allow of the escape of the fluid." This operation he has seen give complete relief in three cases, and in one the relief was permanent. He thinks failure may have been owing to the operation being tried when there was no effusion, or when inflammation was not subdued, or to the fluid not being reached.

Acupuncture has been used without this definite indication. Cloquet reported many successes from it, the needles being left in for some minutes, or even hours. Drs. Renton and Elliotson, in England, also used acupuncture extensively, with benefit, in sciatica. The former left them in only five or ten minutes, inserting sometimes ten along the thigh and leg. He effected many immediate cures in old obstinate cases. He inserted the needles with a slight rotating motion, and "*without pain*."² The effects of acupuncture, employed *empirically*, have been, on the whole, quite uncertain.

When neuralgia is *periodical*, following any of the common types of intermittent fever, whether caused or not by miasmata, it is usually cured for some months, if not permanently, by preparations of bark.

¹ Bost. Med. and Surg. Journ. May, 1845.

² Lond. Med. Gaz. July, 1841.

Even where the attack is not exactly regular, but tends to return about the same part of the day, there is no one medicine more to be relied upon, in the neuralgia so common in females of weak constitution and sedentary habits. Many patients form a habit of using quinia on the return of a paroxysm of *tie douloureux*, cutting it off speedily, and relieving them for several months, or even a year or more. Some physicians employ grain doses three or more times in a day. Some, who have gained a good deal of local reputation, and self-confidence in the treatment of facial neuralgia, administer ten or fifteen grains at a dose. I have known the small doses to succeed immediately after the large had repeatedly failed.

Brodie says that very large doses may be needed. He had to raise the dose, in one instance, up to half a drachm daily, of something called quinia. It is used in as large quantities as that in France. Brodie speaks with perfect confidence of succeeding by the use of cinchona or quinia, combined, if needful, with

Arsenic. This and the carbonate of iron are both considered particularly useful in periodical neuralgia. Having no extensive experience in its use, I will once more quote Dr. Hunt: "Arsenic operates most favourably on persons who are of lax fibre, accompanied by a languid state of the circulation, and whose secretions are rather profuse than otherwise; the urine pale and plentiful, and more especially on those whose skin is cold and moist. In persons of this description, whilst arsenic, to an extent far beyond other medicines, relieves the neuralgic pain, it improves the general health, and gives firmness and vigour to the constitution. When the urine is of a deep colour and scantily secreted, or when it deposits the lithate of ammonia, the tongue loaded, especially if the tip or edges of it are red, arsenic almost invariably disagrees, and aggravates the pain. But as this morbid state of the system frequently depends on or is complicated with disorder of some important viscus, arsenic will often agree, and relieve the neuralgic pain, after the visceral disorder has been removed by appropriate remedies."¹

Our distinguished countryman, Dr. Gross, has found Fowler's solution less serviceable than the arsenious acid in substance—less effective in curing the disease, and more likely to nauseate.

In some intermittent cases, M. Cazenave applied ligatures or tourniquets to the limbs, with very happy effects. One patient had excessive pains in the head, returning periodically, and baffling all treatment. Ligatures were applied to each limb a few hours before the expected attack, moderately tight. The pains were lessened the first day, still less the next, and did not appear at all on the third day. He advises that the application be continued after the disappearance of the neuralgia, for five or six days.

But supposing that we have no obvious indications for treatment, drawn from causes of disease to be counteracted, or from the peculiar features and type of the case in hand. We have still many resources, and some light—alas! too little—to guide us in their use. It will be necessary to name a good many medicines that have gained the best reputation in this painful disease. They are undoubtedly used too much at random; and what we need is, less to have new medicines, than to learn how to use what we have. Let me once more enjoy the luxury of transferring to my humble pages the counsels of one of the most judicious, observing, and enlightened physicians, Brodie. He is addressing students.

"Nor can I think well," says he, "of this modern fashion of resorting on

¹ Prov. Med. Journ. April, 1844.

all occasions to novel methods of treatment. I advise you, if you wish to succeed in your profession, and to be useful to society, to pursue a different course. Make yourselves masters of the old remedies. Learn how to handle them, and what good they will do, and, as a general rule, have recourse to them in the first instance. If the old remedies fail, and you are at a loss as to what you should do, then, and not till then, have recourse to the new ones."

In estimating the value of any medication for this disease, we must remember that intervals of ease, extending over a period sometimes of several months, may give us a hope that the disease is finally cured, but the pains may afterwards return. Many modes of treatment are successful only up to this point, and in the most exquisite forms of neuralgia it is a blessed boon to obtain even this respite.

The medicines which have done most service by their employment internally, might be arranged, not very strictly, however, under the general heads of sedative or narcotic medicines, tonics, and medicines whose operation is not understood—unclassifiable, alterative medicines.

As mere palliatives, sedatives are useful by cutting off the paroxysm, giving relief to pain, and lessening the power of that unhappy habit which makes future paroxysms more likely to ensue. In this respect, the anæsthetic vapours appear to me to be more useful than any other substances. Believing that chloroform is unsafe in the best hands, I always prefer sulphuric ether, though much less convenient and elegant. It need not be inhaled long enough to make one insensible; the power of perceiving pain being lost before consciousness of identity of perception of surrounding persons and objects. In forms of neuralgia depending on mere nervousness and irritability, the pains will not always return as the effects of ether disappear, and inhalation, therefore, does not require to be continued long. Many interesting facts of this kind are related by English physicians.

These substances are all more applicable to neuralgia excited by irritation reflected from a distant organ, or some temporary exposure, than to those cases where some local mechanical cause affects the nerve itself.

With a curative object, the best effects from sedative medicines are got by giving some of the vegetable narcotics, in full and frequent doses, until the pain is quelled, then continuing them with larger intervals for a while, and finally substituting a tonic. Among these narcotics, it is difficult to say which has the greatest weight of testimony in its favour. Leaving out aconite, as being a substance of very peculiar properties, we find different practitioners preferring belladonna or conium—less generally, stramonium or hyoseyamus, or the preparations of opium.

I have collated the testimony of many authors whose communications appear in the journals, as well as the systematic writers on neuralgia; but as the same principles govern the administration of all these remedies, I will not attempt to give the various facts on which different practical men found their preference for this or that medicine. Belladonna, employed on the principles just named, has, I think, the strongest testimonials in its behalf. The following mode of employment has succeeded very well with M. Trousseau: A quarter of a grain of the extract is given, in pill, every hour, until some dizziness or effect on vision is produced, by which time the pains are quieted. Then the medicine is continued with longer intervals. This course must be resumed, if the pains recur. After they have disappeared, a tonic is used; usually quinia or iron. This plan succeeds best in facial neuralgia. According to all who have used it, belladonna must be continued until some slight effect is perceived in the throat or state of vision, or vertigo. In full-blooded

persons, it may be combined with ipecac., as recommended by Golding Bird for neuralgic dysmenorrhœa; or, in those who are pale and feeble, with iron or zinc.

Conium is preferred by many. Mr. Lawrence says it is the only one of these narcotics on which we can have any reliance for checking the paroxysms. "I have seen in several cases, where it has been given largely and at short intervals—and it must be given in such doses as to produce some of its peculiar effects on the nervous system—that it has put a stop to the paroxysms, and for such a length of time that I have thought it had cured the disease; but in some instances, where persons have remained well for several months, and even in one case for more than a year, the pains have again showed themselves; but the agony has been considerably controlled by it." He does not mention what has been the result of following up this temporary cure with a tonic course.

Such has been the experience with all these narcotics. To state who has succeeded best with one, and who with another, would be hardly a profitable use of our remaining space. It is necessary, and often difficult to procure the substances pure and strong, especially the extracts. We must also seek carefully for any circumstances that may aggravate or keep up the irritation, and attend to the state of the bowels, and several secretions.

Opium and its preparations, are considered to be better suited to internal than external pains. Morphia and its salts are most employed. Their use may be profitably confined, I think, to cases that recur at night, or early morning, when an evening anodyne may be extremely useful. The acetate of morphia is stated, however, to have produced some cures, in the hands of Dr. Bardsley and others. But the more common opinion is, that it tends to increase nervous irritability and costiveness, more than the other narcotics, without having so much control over neuralgic pain. For immediate relief to agonizing paroxysms, it is every way inferior to sulphuric ether, used by inhalation.

Aconite.—The internal administration of aconite has often disappointed physicians, yet when used in full doses, and continued for some time, permanent relief has often been derived from it. Dr. Fleming has called particular attention to its power of depressing nervous and vascular action, and to its use in neuralgia. "He gives a table of forty cases; ten of these have been published by others, and they are all permanent cures. Of the thirty cases which fell under his own care, there were seventeen permanent cures, and in thirteen the relief was only temporary. In some of these, the medicine was used internally, in others externally, sometimes both." Aconite is considered an antiphlogistic, not well adapted for feeble persons. Dr. Fleming suggests that its internal use is most likely to be beneficial, when neuralgia depends on inflammation in any part of the nerve (a condition quite unusual), or on sympathetic irritation; its external use, when the disease arises from local functional irritation. The strong tincture which he recommends has occasioned several deaths, by its accidentally being swallowed in an overdose. He uses five minims three times a day, increasing cautiously. The article we get here is apt to be quite weak. On the whole, the results of aconite used internally, as I find them reported, do not seem to me so favourable as those of belladonna, while it is much less safe and manageable.

I have obtained good effects from the following combination of aconite with tonics. R.—Iron by hydrogen $\mathfrak{z}\text{ij}$; tinct. aconit. rad. (sat.) $\mathfrak{z}\text{j}$; M. ft. pil. lx.

Give one pill after each meal, until the neuralgic pain ceases, and then substitute the following tonic pills. R.—Quin. sulph., iron by hydrogen, \mathfrak{aa} $\mathfrak{z}\text{j}$; M. ft. pil. lx.

All these narcotics, including aconite, have been known to cure obstinate cases, when given by accident in excessive quantities. I have collected from different sources a number of cures, said to be permanent, gained by means of narcotism produced suddenly by large doses of belladonna, opium, and aconite. The same thing has happened with strychnia. A lady who had suffered severely for years, from facial and cervical neuralgia, took by mistake a teaspoonful of the strongest tincture of aconite root, which had been prepared for use by friction. The immediate effects were most distressing and dangerous, her life being saved only by the prompt employment of stimulants. After her recovery she continued wholly free from the neuralgia for more than a year, after which time it returned, in a milder form.

One Dr. Chabert, of New York, proposes to only poison his patients with prussic acid, not quite dead, and then bring them to. He succeeded in one instance, if we may believe him (not only in bringing the man to, but in curing the neuralgia.) These results are curious, whether practically valuable or not.

Nux vomica and strychnia are medicines of great utility in the neuralgia of feeble persons. The former was long ago recommended by Linnæus as a cure for gastralgia. The cases it is believed to be best fitted for are those occurring in pallid, lymphatic persons, not those subject to derangement of the motor functions. Rowland thinks strychnia most valuable in intermittent neuralgia. It acts as a tonic, particularly promoting the digestion of food. It can never be administered without anxiety, and should be closely watched. I have known myself of but one instance of its having poisonous effects, when given for neuralgia. But whether from a cumulative property, or from varying susceptibilities of the system, it will sometimes break out unexpectedly, as in the case I alluded to. The first spasmodic symptoms were violent trismus, with a sense of suffocation, &c. The patient was saved, and the gastralgia she had been long suffering from, was almost perfectly cured. I suspected its employment in homœopathic practice, from tetanoid symptoms connected with some mysterious pills, in one young lady, whose disease was, however, a form of chorea.

In the *Medical Gazette*, 1840, Dr. Pidduck relates his experience with strychnia, which is important. He gives six cases, two of infra-orbital neuralgia, one sciatic, one in the arm and hand, accompanied by *loss of power*. The strychnia was given usually one-twelfth of a grain twice or three times a day, and always with benefit. In one case, relief began after the third dose, and was complete before the twelfth; the pain returned in slighter degree a few days after, and the medicine was resumed with equally good effect, after which there was no relapse. When any mechanical irritation exists, at any part of the nerve, it is not likely to do good. If I understand Dr. Pidduck rightly, he ascribes much or all of the power of strychnia over paralytic and painful diseases, to its tonic properties, and its producing more complete assimilation of food. From all the reports of strychnia in neuralgia, I should infer that it was a medicine promising much good, and particularly deserving of further trial.

Among tonics, having already spoken of the two most important, iron and quinia, I need only allude to the employment of zinc. The preparations of zinc are believed to be valuable tonics, more particularly in affections of the nervous power of motion, as chorea. The pills of Mèglin, celebrated in France as a remedy for facial neuralgia, consist of equal parts of extract of hyoscyamus, extract of valerian, and oxide of zinc. How much the zinc adds to their efficacy, I have no means of knowing; though it appears that the zinc is sometimes omitted.

The valerianate of zinc is a preparation of great value. It combines a soothing with a tonic power, and has, so far as I have observed, no tendency, like so many of the sedative drugs, to derange the secretions and impair digestion. It is found most beneficial in facial neuralgia, not presenting a regular periodical type, and not connected with rheumatism or syphilis. I have before me the notes of three cases, in which its good effects were obvious, after many other powerful remedies had failed. I am in the habit of administering three-quarters of a grain, in pill, two or three times a day.

Turpentine has succeeded so often, in sciatica especially, that it ought, I think, to be ranked next in value to the carbonate of iron and quinia, if any general comparison could be instituted between remedies all adapted for different varieties of neuralgic disease. Of all the testimony and advice in regard to it, none is so important as that of Martinet. He settled down on a preference for doses of about twenty drops, three times a day, allowing of its absorption. When it produces diarrhoea, he finds its good influence thwarted. It produces a strong sense of heat in the affected part, as well as in the stomach and bowels, sometimes a general perspiration. This sense of heat in the part is most marked in those who are cured or relieved.

"This medicine is of approved efficacy," says one of the notices of Martinet's essay, "in all cases of neuralgia affecting the extremities, and particularly in sciatica, when this disease is simple in its character, and evinces no sign that the nerve is either altered in its structure, or compressed by the formation of a contiguous tumour. M. Martinet affirms that, whether the complaint be recent or otherwise, the chance of cure by this remedy is greatest, *cæteris paribus*, when the pain is so intense as to indicate distinctly the course of the nerve, and so obstinate in its nature as to yield to no other treatment whatever." "Twelve days," he says, "usually suffice for curing neuralgia, when it affects the extremities, and more commonly only half that time. To continue it too long would only injure the organs of digestion, if not the urinary organs."

Of seventy individuals, affected chiefly with sciatica and other kinds of neuralgia of the extremities, fifty-eight were cured, viz: three by frictions, and all the others by taking it internally; ten (two of whom intermitted the medicine) obtained only temporary relief from its use, and five received no benefit. Of these seventy-one cases of neuralgia (for one of the patients had two affections of the kind) forty were acute, and thirty-one chronic. Of the acute, thirty-four cases were cured, five relieved, and only one continued in the same state. Of the chronic, twenty-four were cured, three relieved, and four received no benefit.

Dr. Copland speaks highly of the use of turpentine in other neuralgiæ besides sciatica. He says: "A strong recommendation of it is found in its being equally appropriate to the inflammatory and non-inflammatory states of the affection, and in the fact of relapses being much less frequent after its use than after any other remedy."

Colchicum and croton oil may both be considered as having more power over some forms of neuralgia than they owe to their mere effect as evacuates. Both act at once on the kidneys and the bowels, but they have a curative influence beyond this. Croton oil, as has been observed both by Andral and English physicians, has produced cures when given so as to have no more cathartic effect than purgatives that had been previously used in the same cases. As it has been proved that colchicum often increases the proportion of lithic acid and the lithates in the urine, and its best effects are observed in gouty neuralgia, we may infer that it acts by promoting the excretion of these

elements from the blood. Croton oil also increases the density of the urine; what solid ingredients it acts upon particularly, I do not know. Professor Easton suggests some analogy as probably existing in the curative agency of these two substances.¹ This agency has not won such general confidence as many of the medicines before named.

External applications form an important part of the resources for treatment. Some of those which affect in the simplest manner the circulation and nervous activity near the skin, are very useful as palliatives. Pressure and rubbing are often employed instinctively. We have stated that, generally, pressure on certain radiating or focal points aggravates the pain. But in ordinary cases, not inflammatory, pressure bearing pretty evenly along the whole course of a nerve relieves it. I have more than once completely stopped a paroxysm of cubito-digital neuralgia by careful bandaging of the arm. The pain is often pressed away to another spot, and I have succeeded in thus chasing it off from the fingers' ends.

Both cold and warm applications have been found excellent palliatives, in different cases; just as with weak eyes and some forms of chronic inflammation, it can only be determined which will be most soothing, by actual trial. Compresses with cold water and ice; douches of cold water have sometimes carried off paroxysms.

Dr. Warren applies very frequently warm and hot fomentations; and the hot douche. For the latter he has a vessel of hot water, a stopcock and hose, and lets on a stream of water, say a quarter of an inch in diameter, at a temperature of 110° F., continuing it as long as the patient can bear it, which is usually for five or ten minutes. Then he applies frictions with olive or palm oil for a few minutes. He has met with much success from these applications. It is only in the severer cases that he adds to hot fomentations some narcotic plant, as conium, hyoseyamus, or hops.

Rubefacients—the ginger or mustard poultice—deserve their reputation in tic douloureux. I have seen a paroxysm completely cut short by a weak solution of ammonia applied to the cheek, producing most abundant flow of tears.

Blisters are among the most valuable remedies. Dr. Warren says they are perhaps the most frequently useful of all. They should not be kept open long, or allowed to run into suppuration, but fresh ones should be applied from time to time. Two modes of application have been most successful. One is, by placing rather long blisters along the track of the nerve, and the other consists in putting small repeated ones over the uppermost point affected, or that which serves as the radiating centre of pain. It is in this respect that Valleix thinks his investigation of the "focal points" of neuralgia will be useful in guiding our treatment. He relates a number of cases, some of them highly interesting and striking in their results, in which a succession of small blisters over these points was employed. The plan is stated to have produced a cure in many cases, and to have always given great relief. Blisters are also very beneficial in inflammatory cases, after the acute stage has passed. Fuller recommends them, when symptoms of effusion exist, the active signs of inflammation having disappeared—and advises long and narrow blisters, along the course of the nerve, to be dressed with mercurial ointment, to aid in obtaining the constitutional effects of mercury, or with powdered morphia, to relieve severe suffering.

In the obstinate affections, sciatica especially, issues and the moxa at times succeed, when nothing else will. A distinguished physician of this city relies

¹ London Lancet, 1842.

mainly on issues made with Vienna paste, over the upper part of the ischiatic nerves in obstinate sciatica. When the disease shows a disposition to change place from a nerve it has long occupied, we may favour this disposition by making an issue on the part it seems inclined to invade. This is illustrated by an interesting case in Dr. Rowland's Essay, where facial neuralgia of the severest kind had lasted nearly twenty years, when the pain showed an inclination to attack the shoulder, and an issue applied there cured, almost completely, for two years at any rate, the excruciating affection of the face, while a slight neuralgia persisted in the new seat.

Many of the sedatives are used externally with even more advantage than internally. We have already alluded to the fomentations of hyoseyamus, &c., which have often been very beneficial in the hands of Dr. Warren—and also to the use of belladonna in plaster, over the spot of spinal tenderness. This last I have also found exceedingly serviceable in many simple neuralgiæ, as also chloroform, by itself or combined with camphor in a liniment.¹ In many country districts, where belladonna grows abundantly, poultices made by boiling down together the roots and leaves of the fresh plant, have attained much celebrity, both in rheumatic and neuralgic affections. The narcotic effects often follow this mode of employment. We are assured by a physician of such a region, that this treatment is often successful without any internal medicine. Permanent cures are effected, within a fortnight, of facial neuralgia that had existed for years. Ointments and watery solutions of belladonna are reported, by Dr. De Brayne, Dr. Todd, and others, as having been successful in producing permanent cures. Dr. Lombard has given very satisfactory results from the use of lotions of hydrocyanic acid and its compounds; in neuralgia of the more superficial nerves, not complicated by inflammation.

Aconite, its saturated tincture, and alkaloid, possess an extraordinary benumbing power, substituting for acute pain some disagreeable tingling sensations. In my own observation, I have not found them so useful palliatives as chloroform, and can judge of any curative power they may have only from books, which give cases treated by so many other means at the same time as to have little real scientific or practical value. In some of Dr. Fleming's reports, the drug was only used in this mode. One crural neuralgia, confined to a spot near the patella, had existed three years, and been relieved by nothing but the potential cautery; it was cured in eight days by the external application of the tincture of aconite. This application has sometimes produced the general symptoms of poisoning by aconite, and should be used with great care, particularly if there be any abrasion of the skin.

Of both aconite and veratria, the results have not been near as favourable in other hands as they were represented by Turnbull, and some others who first brought them most prominently forward. Pereira, Brodie, Rowland, all agree in this statement. Pereira found the veratria generally fail, and considered it far inferior to aconite. Brodie employed it in several cases without any advantage. Rowland never obtained permanent relief from it in any case of long standing. He says the first friction with an ointment of veratria often gives very great relief; perhaps this continues a good deal longer than the usual intervals of ease, but the pain keeps recurring and the intervals of ease keep shortening, until they hardly outlast the unpleasant prickling occasioned immediately by the application. Atropia, the alkaloid of belladonna, has cured an obstinate facial neuralgia, an ointment of five grains in three drachms of lard being rubbed in a small piece as large as a pea, three times a day.

¹ Cazenave employs a "pommade," containing chloroform ʒiv , cyanide of potassium ʒiiiss , lard ʒiij .

The endermic application of narcotic and anodyne substances deserves to be more used than I have ever known it to be in this country. A blister should be raised, better by ammonia than cantharides, and the exuded coagulable matters should be removed at each application of the drug, since they would interfere with absorption if allowed to remain. The substance applied should be in the form of powder, or perhaps watery solution, not cerate. Fuller mentions that the salts of morphia give much more pain than pure powder of morphia. The acetate, however, has been most employed. The place of application should be well chosen—the same as in the ordinary use of blisters for neuralgia, along the track of the nerve, and at a point where this nerve is superficial, and especially one of the *focal points*.

M. Magistel published his results obtained by the endermic use of acetate of morphia, about twenty years ago. His were cases of hemicrania and neuralgia of the face. His success was great, but Trousseau since thought he gained great advantage by substituting the more soluble salts, the sulphate and muriate.

An interesting paper in the *Lancet*, 1846, contains some successful cases, treated by Dr. White, of Newcastle. The following are some remarks of the reporter:—

“This mode of treating pains which appear to depend principally upon nervous irritation, or it may be chronic inflammation, and are confined in their extent, has been extensively employed here, and in no cases has it been attended with any disagreeable effect; but, on the contrary, with the most surprising benefit in many, or, I might say, in most of those patients who, from their condition, seemed to be suitable for its application. The pain is generally soon relieved, and a comfortable feeling of ease, with sometimes a little drowsiness, is experienced. In fact, in sciatica, or indeed in any case where the pain can be distinctly traced along the nerve, this plan is often the only one that affords even partial relief. The application must be used as near the trunk of the nerve as possible, particularly where the pain most nearly centralizes. It sometimes requires to be reapplied nearer and nearer the terminating branches, as the pain is gradually expelled. Hence, in sciatica, the nates first, then the knee, and lastly the foot, sometimes in succession, require the vesication, and subsequent sprinkling of the morphia. It is quite certain that this treatment has entirely succeeded when leeches, blisters, moxas, belladonna externally, &c., had entirely failed.”

I regret that the interesting narrations now before me, of old cases of neuralgia in the sciatic and trifacial nerves, treated with great sagacity and happy results, and very well reported, by M. Mondière, cannot be copied into this essay, with their suggestive details. Some of them were of the most exquisitely acute form; some had tortured the patients for years, and resisted the greatest variety of scientific treatment; and relief was obtained in two or three applications, increased day by day, and the results as to permanent cure were most happy. His cases were published earlier than the investigations of Valleix; and it is interesting to observe that his best successes were obtained by vesication and the sprinkling of morphia over points, exactly such as this later observer has indicated.¹ In these cases no internal treatment seems to have been employed at the same time, though the cures were afterwards followed up and confirmed by tonics, or other management as required. The inoculation of solutions or pastes containing morphia has very often failed, and deserves to be mentioned rather for curiosity. Its practical advantages over the application to a blistered surface do not appear, unless in a slight saving of pain,

¹ Répertoire de Clinique, &c. 1836.

while its success is much less. Dr. Rowland obtained good results from it in but one case, out of "at least twenty." But I have been much impressed with the success of the "endermic" treatment as above described; and cannot but think it more deserving of trial than almost any other measure we have been considering, which is at all novel.

After reading a good many papers, on the use of electricity and galvanism in neuralgia, the result is that I am a good deal disappointed in the accounts of their efficacy as means of cure. In the *London* and *Edinburgh Journals* are some communications exhibiting facts of interest. M. C. James attributes the failures to the imperfect application—recommending electro-puncture, the needle (of platina or gold, and fine) carried to the nerve itself, not necessarily deep enough to transfix it. Needles are inserted near the origin, and near the end, of the affected nerve, and a current passed between them from a voltaic pile of say five or six plates, continued for a few seconds only, the positive pole being made to communicate with the needle towards the origin of the nerve.

M. Hermel has reported cases of cure by electro-puncture, almost all of lumbo-sacral and sciatic neuralgia, sometimes accompanied by partial paralysis. His conclusions are thus stated:¹ "1. Electro-puncture is applicable to idiopathic or essential neuralgias. 2. The violence of the pains is not a counter-indication to the employment of this therapeutic agent; they have never in any case been aggravated by its use.² 3. The paralysis which supervenes in the progress of idiopathic neuralgias yields to the same treatment." It may be mentioned, for the gratification of our homœopathic friends, that Halliday knew of a case aggravated by it, and Bérard, of Paris, gave himself a neuralgia by experimenting with acupuncture for the purpose of applying electricity.

Some successes have been obtained by the electric spark and by galvanism. The latter has been used by Dr. Thomas Harris, with the result of curing five out of seven cases, but only after intervals of from ten days to five weeks. Among various affections which I have known to be somewhat relieved by the use of galvanic rings, was one of sciatica, of thirty years' standing. The relief coincided with the appearance of an eruption of an eczematous character, which spread from the point of application down to the leg, and was more troublesome than the sciatica itself, while it lasted. After four or five weeks the eruption was nearly healed and the sciatica returned, but much mitigated in severity. I am also acquainted with ladies who count confidently upon cutting off an attack of neuralgia by applications of the wires connected with the galvanic pile. Their frequent resort to it shows that it has no curative powers for them.

The effects of all these agencies are not so well understood that we can safely foretell their operation in any particular case. Empirically employed, with the slight indications we can gather from our imperfect knowledge, their workings appear to be capricious. The words of Pereira, applied to the magnet, have too much truth as an expression of our experience with these other powers. "In some instances it has appeared to exercise a most remarkable influence over neuralgic pains and spasmodic affections; at one time apparently curing, at another palliating, and occasionally augmenting all the patient's sufferings. But, in a large proportion of cases, it fails to produce any obvious effect."

It remains to speak of surgical operations for neuralgia, and we shall do it briefly. Besides operations already spoken of as called for by the known ex-

¹ Quoted from Velpeau, in Copland's Dict.

A mistake.

istence of a scar or other local source of irritation, surgery has been called to render her aid empirically, in cases which resist other modes of treatment. Three principal operative procedures have been performed, all with occasional success, namely, section of the nerve, excision of a part of its length, and cauterization. Mere division of the nerve generally gives ease only for a time, pain returning in a few days sometimes, oftener a few weeks. The case of Dr. Haighton, who performed this operation on his own mother, is commonly cited among the instances of success; but it appears that the pains reappeared after a long time.¹ Cases of reported success by this mode are numerous, but those of failure far outnumber them.

Excision and cauterization count a much larger proportion of favourable results. Dr. Warren has frequently practised the former on parts of the trifacial nerve. He exposes the nerve, passes a curved knife under it, raises it and cuts out half an inch or so of its length. He then lets the wound heal immediately. He believes that this operation would be generally successful, if performed within a few weeks of the origin of the disease. It should be done, in his opinion, as soon as other modes of treatment have been tried and have failed. By longer delay, "the organic habit" of pain is set up, and the whole course of the nerve becomes diseased. He has observed several instances where the paroxysms did not disappear at once, but the pain abated only slightly for a while, and then either continued to diminish gradually, or else disappeared suddenly, after a time. "After the paroxysms have been cured," says he, "exposure to cold on the occurrence of an injury has reproduced them in the same or in neighbouring nerves."

Cauterization has been thoroughly accomplished by first cutting the nerve across, and then touching the ends with nitrate of silver, or a small heated iron. It is considered by Boyer the most effectual operation of all, as "it destroys not only the whole substance of the nerve for a certain distance, but it also attacks all the nervous branches proceeding from it through a considerable extent, which as they may participate in the disease, might be sufficient to keep up the pain, after the resection of the principal trunk." In the detailed accounts of cases, cauterization is not mentioned as having been followed by the same partial relapses and remnants of disease as Warren has observed after excision. In one case of final success, however, dangerous general symptoms, convulsions, &c., occurred.

The successes of either excision or cauterization surpass those of mere section of the nerve. Between the first two, the choice must be determined, not so much by any general law, as by the convenience of each case; in particular the depth and size of the nerve, and the importance of avoiding deformity in the situation it happens to occupy. The difficulty of finding and isolating the nerve, so as to be sure of dividing it, and nothing else with it, is spoken of by Boyer as very great, and a serious objection to the operation by excision.

It seemed to me more convenient, though less logical, to consider the different modes of operating first, and the question of the expediency of any operation afterwards, inverting the order which we should follow in practice. It is certain that comparatively slight operations have sometimes gained long respite, in a disease which is one of the most painful we are acquainted with. It is a disease which has led several sufferers to submit, for the uncertain chances of relief, to repeated amputations in the large joints, even when the disease had first originated from amputation, and before anaesthesia had charmed away

¹ Rowland, p. 90.

the shadows of fear and agony from the atmosphere of the operating-room. On the other hand, we know that many forms of neuralgia tend to travel from one nerve to another, and seem more disposed to invade a new region when they are dislodged from an old haunt; that many spring from a constitutional cause; that others depend on disease in the nervous centres, the presence or absence of which we cannot always ascertain; and that in the limbs we have motor and sensitive fibres in the same nervous trunk, not separable in an operation, so that a permanent loss of function paralyzes the muscles it supplies, and would cause the greatest inconvenience, if it occurred in the main nerve of a limb. Yet the sciatic nerve has been cut down upon by Malagodi, and eighteen lines in length of it were cut out, with the effect of leaving a paralysis of the leg and foot, instead of the neuralgia.

To show that there is room to question in a general way the utility of operations for neuralgia, let me once more refer to the highest surgical authorities. Dr. Mott's views are stated as follows by Reese, in his *Notes to Cooper's Surgical Dictionary*, 1839:—

"Dr. Mott has adopted the practice of dividing the nerve in almost every case of neuralgia, where it is practicable. He has repeated this operation, on the infra-orbitary, mental, and other nerves, so frequently and with so great success that he confidently recommends it to his pupils and patients." In Dr. Lee's additions to *Copland's Dictionary of Practical Medicine*, 1847, is a sentence apparently referring to Dr. Mott's opinions expressed in his *Lectures on Neuralgia*, 1842, and containing these words: "After extensive trials he laid the operation aside, as he found the disease very certain to return as severe as ever."

Brodie says of the operation for facial neuralgia: "It is altogether an unscientific operation, from which we have no more right to expect benefit than we should have from the amputation of the testis, in a case of pain referred to that organ, in consequence of a calculus being lodged in the urethra." We may urge in reply: 1. That the analogy does not hold between an irritation temporarily reflected from one organ to another, and a fixed affection, always haunting one particular nerve. 2. That the operations have frequently succeeded, at any rate, in obtaining a welcome respite of months or years.

Many points pertaining to the general management, or regimen of neuralgic patients have come up incidentally in this essay. Their modes of living ought in all cases to be regular, the diet simple, generally nutritious and compact, except in cases of plethora or inflammation. Abstinence from tea and coffee ought always to be enforced, at least long enough to test its effect. The habitual use of these nervines keeps up a morbid sensitiveness of the nervous system. I have observed this particularly in regard to strong tea used by feeble females. With some of this class, it is unfortunately impossible to avoid a confining and toilsome life, often in confined air and constrained position, bent over the monotonous labours of the needle. Thoughtfulness and kindness on the part of employers must here be looked for to accomplish what science can only indicate. An early hour of going to bed and rising should be observed. The mind should be preserved from overstraining and from trying excitements. Worrying, and particularly angry feeling, are a frequent exciting cause of paroxysms. Regular exercise of the different muscles should be insured, as systematically as is consistent with cheerful employment of the mind and feelings. A few cases have been cured by exchanging an inactive life for one of fatigue. Pinel mentions a gentleman cured at last of sciatica, by becoming a soldier. Another patient got rid of a facial neuralgia by aid of the practice of boxing, carried often to the point of great fatigue.

In quoting often from writers of reputation, I have been influenced only by a desire to convey, in the simplest and surest way, the results of varied observation. When men of sagacity and large experience have given us their views, in regard to the disease in hand, or to the several collateral subjects, which each man has studied separately more thoroughly than one man can study all, we may well borrow their statements, not indeed to adopt them blindly, but with all the deference due to practical knowledge and mature thought.

In the first place, I have been told that it is a common mistake to suppose that the country of the South Sea Islands is a vast, unbroken expanse of water. In fact, it is a collection of small, scattered islands, many of which are very small and some of which are very large. The islands are scattered over a vast area of the Pacific Ocean, and the distance between them is often many miles. The islands are of various shapes and sizes, and some of them are very fertile and some are very barren. The climate is generally warm and humid, and the people are of various races and languages. The islands are often very beautiful, with white sandy beaches and lush green vegetation. The people are often very friendly and hospitable, and they often welcome visitors to their islands. The islands are often very important to the people who live on them, and they often have a rich history and culture. The islands are often very important to the world, and they often have a great deal to offer to the people who visit them.

